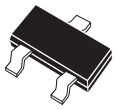
**CMPT3904 NPN**
**CMPT3906 PNP**

**COMPLEMENTARY SILICON TRANSISTORS**



**SOT-23 CASE**

**Central™ Semiconductor Corp.**

**DESCRIPTION:**
The CENTRAL SEMICONDUCTOR CMPT3904, CMPT3906 types are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in a surface mount package, designed for small signal general purpose amplifier and switching applications.

**MARKING CODES:**
**CMPT3904: C1A**
**CMPT3906: C2A**

**MAXIMUM RATINGS:** ($T_A$=25°C)

| | SYMBOL | CMPT3904 | | CMPT3906 | UNITS |
|---|---|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 60 | | 40 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 40 | | 40 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 6.0 | | 5.0 | V |
| Continuous Collector Current | $I_C$ | | 200 | | mA |
| Power Dissipation | $P_D$ | | 350 | | mW |
| Operating and Storage Junction Temperature | $T_J$,$T_{stg}$ | | -65 to +150 | | °C |
| Thermal Resistance | $\Theta_{JA}$ | | 357 | | °C/W |

**ELECTRICAL CHARACTERISTICS:** ($T_A$=25°C unless otherwise noted)

| | | CMPT3904 | | CMPT3906 | | |
|---|---|---|---|---|---|---|
| SYMBOL | TEST CONDITIONS | MIN | MAX | MIN | MAX | UNITS |
| $I_{CEV}$ | $V_{CE}$=30V, $V_{EB}$=3.0V | | 50 | | 50 | nA |
| $I_{BL}$ | $V_{CE}$=30V, $V_{EB}$=3.0V | | 50 | | 50 | nA |
| $BV_{CBO}$ | $I_C$=10μA | 60 | | 40 | | V |
| $BV_{CEO}$ | $I_C$=1.0mA | 40 | | 40 | | V |
| $BV_{EBO}$ | $I_E$=10μA | 6.0 | | 5.0 | | V |
| $V_{CE(SAT)}$ | $I_C$=10mA, $I_B$=1.0mA | | 0.20 | | 0.25 | V |
| $V_{CE(SAT)}$ | $I_C$=50mA, $I_B$=5.0mA | | 0.30 | | 0.40 | V |
| $V_{BE(SAT)}$ | $I_C$=10mA, $I_B$=1.0mA | 0.65 | 0.85 | 0.65 | 0.85 | V |
| $VB_{E(SAT)}$ | $I_C$=50mA, $I_B$=5.0mA | | 0.95 | | 0.95 | V |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=0.1mA | 40 | | 60 | | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=1.0mA | 70 | | 80 | | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=10mA | 100 | 300 | 100 | 300 | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=50mA | 60 | | 60 | | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=100mA | 30 | | 30 | | |

R4 (26-September 2002)

**Central™**
**Semiconductor Corp.**

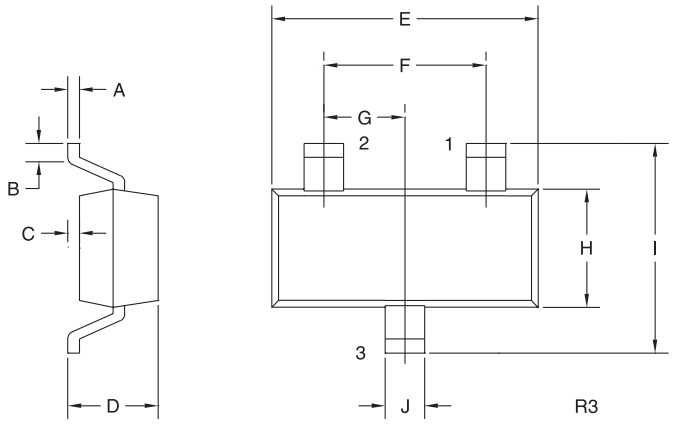
**CMPT3904 NPN**
**CMPT3906 PNP**

**COMPLEMENTARY**
**SILICON TRANSISTORS**

**ELECTRICAL CHARACTERISTICS:** ($T_A$=25°C unless otherwise noted)

| SYMBOL | TEST CONDITIONS | CMPT3904 MIN | CMPT3904 MAX | CMPT3906 MIN | CMPT3906 MAX | UNITS |
|---|---|---|---|---|---|---|
| $f_T$ | $V_{CE}$=20V, $I_C$=10mA, f=100MHz | 300 | | 250 | | MHz |
| $C_{ob}$ | $V_{CB}$=5.0V, $I_E$=0, f=1.0MHz | | 4.0 | | 4.5 | pF |
| $C_{ib}$ | $V_{BE}$=0.5V, $I_C$=0, f=1.0MHz | | 8.0 | | 10 | pF |
| $h_{ie}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 1.0 | 10 | 2.0 | 12 | kΩ |
| $h_{re}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 0.5 | 8.0 | 0.1 | 10 | $x10^{-4}$ |
| $h_{fe}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 100 | 400 | 100 | 400 | |
| $h_{oe}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 1.0 | 40 | 3.0 | 60 | μmhos |
| NF | $V_{CE}$=5.0V, $I_C$=100μA, $R_S$=1.0kΩ f=10Hz to 15.7kHz | | 5.0 | | 4.0 | dB |
| $t_d$ | $V_{CC}$=3.0V, $V_{BE}$=0.5, $I_C$=10mA, $I_{B1}$=1.0mA | | 35 | | 35 | ns |
| $t_r$ | $V_{CC}$=3.0V, $V_{BE}$=0.5, $I_C$=10mA, $I_{B1}$=1.0mA | | 35 | | 35 | ns |
| $t_s$ | $V_{CC}$=3.0V, $I_C$=10mA, $I_{B1}$=$I_{B2}$=1.0mA | | 200 | | 225 | ns |
| $t_f$ | $V_{CC}$=3.0V, $I_C$=10mA, $I_{B1}$=$I_{B2}$=1.0mA | | 50 | | 75 | ns |

**SOT-23 CASE - MECHANICAL OUTLINE**




| DIMENSIONS | | | | |
|---|---|---|---|---|
| | INCHES | | MILLIMETERS | |
| SYMBOL | MIN | MAX | MIN | MAX |
| A | 0.003 | 0.007 | 0.08 | 0.18 |
| B | 0.006 | - | 0.15 | - |
| C | - | 0.005 | - | 0.13 |
| D | 0.035 | 0.043 | 0.89 | 1.09 |
| E | 0.110 | 0.120 | 2.80 | 3.05 |
| F | 0.075 | | 1.90 | |
| G | 0.037 | | 0.95 | |
| H | 0.047 | 0.055 | 1.19 | 1.40 |
| I | 0.083 | 0.098 | 2.10 | 2.49 |
| J | 0.014 | 0.020 | 0.35 | 0.50 |

SOT-23 (REV: R3)

**LEAD CODE:**
1) BASE
2) EMITTER
3) COLLECTOR

**MARKING CODES:**
**CMPT3904: C1A**
**CMPT3906: C2A**

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